U S WEST

HIGH CAPACITY MARKET STUDY

SEATTLE

METROPOLITAN STATISTICAL AREA

December 1, 1998

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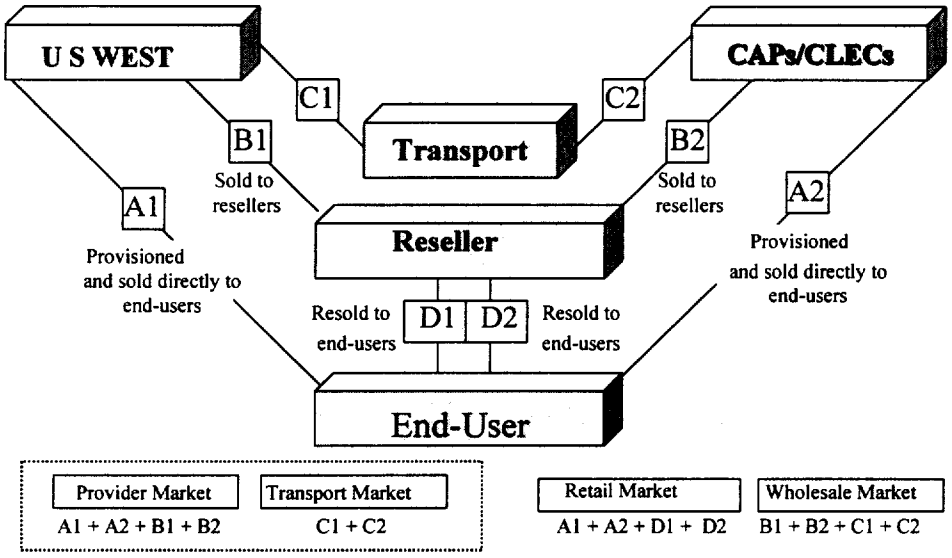
EXECUTIVE SUMMARY

This report analyzes the state of competition in the market for high capacity telecommunications services (i.e., DS1 and DS3) in the Seattle, Washington, Metropolitan Statistical Area. QUALITY STRATEGIES was asked to: describe the Seattle High Capacity Market; describe the market participants; and to estimate the market shares of U S WEST and the other market participants.

The Seattle market for high capacity services can be best described as a three tier market, as illustrated below, with U S WEST and other CAP/CLEC providers selling services to end users, resellers, and other carriers for "transport" purposes. This market can be sub-divided based on who high capacity services are sold to – Retail and Wholesale Markets – versus who is actually providing the underlying facilities – the Provider and Transport Markets.



Prior to the mid-1990's U S WEST largely had the Seattle High Capacity Market to itself. Since 1994, MCI, TCG, ELI, and WorldCom have all turned-up high capacity networks in Seattle. All of these competitors are seasoned well-financed telecommunications companies.

The growth in alternative fiber networks is reflected in market share data. In all cases, U S WEST's market share appears to be declining at a relatively rapid rate. As of the end of 1997, only 20.7% of the retail customers purchased high capacity services directly from U S WEST. The other 79.3% purchased services from resellers and other CAPs/CLECs. The situation was reversed with respect to the actual provision of high capacity service – where U S WEST accounted for 65.2% of the Provider Market and 74.2% of the Transport Market with the other providers accounting for the remainder. Even these relatively high market shares represent a significant decrease from the end of 1994 when U S WEST serviced 80.3% of the Provider Market.

Recent data indicates that other CAPs/CLECs are capturing nearly two-thirds of the growth in high capacity services, in the rapidly growing Seattle market. Between the second and the fourth quarters of 1997, providers other than U S WEST accounted for 64.5% of the growth in the Provider Market and

77.9% of the Transport Market. This trend is expected to continue due to the fact that U S WEST competitors in Seattle have an enormous amount of unused capacity in their existing fiber networks

Both U S WEST's relatively low Retail Market share and the large amount of unused capacity in competitive networks make it highly likely that U S WEST's share of the Provider and Transport Markets will continue to decline. This decline will be exacerbated, particularly in the Transport Market, by continued consolidation in the telecommunications industry (e.g., the mergers of AT&T/ TCG and MCI/WorldCom).

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OBJECTIVES

The primary objective of this report is to provide U S WEST with a high-level overview of the Seattle MSA (King and Snohomish Counties) High Capacity Market. The report is structured to meet this objective by providing:

- A description of the High Capacity Market and sub-markets
- A description of the High Capacity competitive landscape in the Seattle MSA
- Market share estimates for U S WEST and its competitors

This report describes and defines the Seattle MSA High Capacity Market, identifies the types of circuits included in the share estimates, briefly describes common high capacity applications, and identifies and describes the strengths and weaknesses of facilities based competitors in the Seattle MSA. The competitive analysis identifies market trends and carrier consolidations.

Because the Seattle market has become increasingly competitive over the last several years, U S WEST has experienced rapid, consistent erosion of its High Capacity Market share. QUALITY STRATEGIES has been tracking U S WEST's Provider Market share since 1994 and its Transport Market share since 1997. As could be expected, U S WEST's share of each market has decreased substantially as CAPs have entered the market and expanded existing facilities.

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MARKET DESCRIPTION

Although the Telecommunications Act of 1996 formally opened the local exchange market to competition for the first time, U S WEST has been experiencing competition of another type for several years. In the early part of the 1990s, Competitive Access Providers (CAPs) began installing fiber facilities in the Seattle Metropolitan Statistical Area (MSA) to compete directly with the incumbent local exchange carrier, U S WEST, for a portion of its market.

Primarily, the CAPs began offering high capacity (DS-1 and DS-3) circuits to end-users and carriers as a means of bypassing the local exchange carrier (U S WEST). High capacity circuits are used to transport traffic between end user premises, from end-user premises to carrier Points of Presence (POPs) or to transport traffic between POPs and Central Offices (COs) or tandems.

The High Capacity Market can be segmented in several ways. First, because high capacity circuits are used for two distinct purposes, two separate sub markets emerged: 1.) the Provider Market and 2.) the Transport Market. For purposes of this study, we will refer to the combination of the two as the High Capacity Market. Please refer to the graphic on page 3 for a visual description of this concept.

- Provider Market: Provider circuits are DS-1 and DS-3 circuits provisioned by a facilities-based local telecommunications provider (either U S WEST or a CAP). These circuits are ultimately purchased by end-users to transmit voice and data traffic from the end user's premise to a POP or CAP switching center. The provider does not always sell the circuit directly to the end user.
- Transport Market: Transport circuits are high capacity lines purchased by carriers to transmit voice and data traffic from one POP to another or to transmit voice and data traffic from a POP to a Central Office or tandems (for distribution). Transport circuits are purchased by one communications company from another communications company.

The overall High Capacity Market can also be viewed as consisting of a Wholesale Market and a Retail Market. Often a Local Exchange Carrier or CAP provisions a circuit, it does not necessarily maintain the account or bill for it - because it is often resold by another carrier. Because of this situation, QUALITY STRATEGIES is also providing Retail and Wholesale views of the High Capacity Market.

- Retail Market: the retail view is another method of distributing provider share. Instead of crediting the company that provisions the circuit, it credits the company that sells and bills for the circuit and maintains the relationship with the end user.
- Wholesale Market: the wholesale view consists of circuits provisioned by a local telecommunications provider (either U S WEST or a CAP) and sold to another telecommunications provider - either for resale to end users or for transport. Please refer to the graphic on page 3 for a visual description of this concept.

These distinct views became necessary as the High Capacity Market began to mature and purchasing patterns began to deviate from the typical provider - purchaser standard. From the outset, CAPs attempted to form alliances with long distance carriers to provide the private lines linking their customers to their POPs, as well as providing their transport facilities. It is from these beginnings that the concept of

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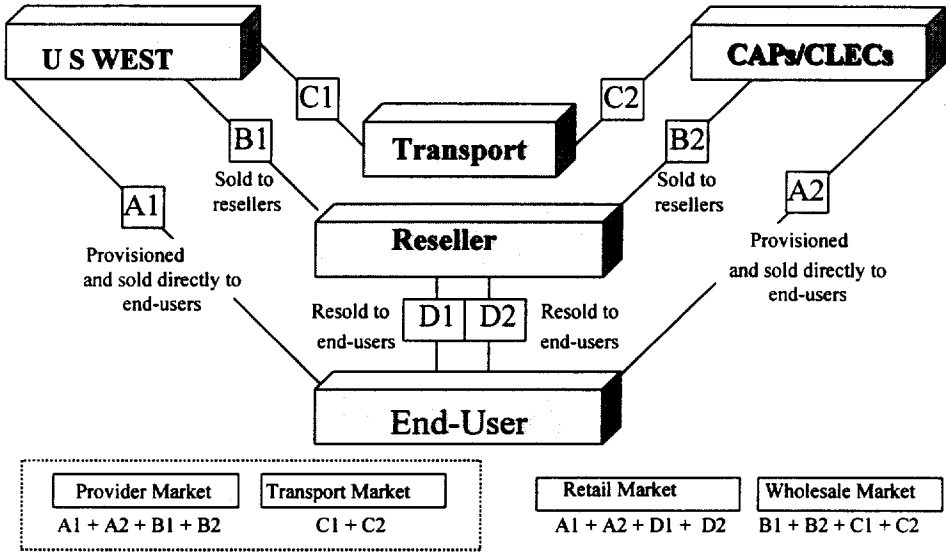
High Capacity resale was formed necessitating the Retail and Wholesale views to supplement Provider and Transport views. At present, many CAPs operating in the Seattle market sell more circuits to long distance carriers than to end users. Because of this, Provider and Retail market share figures illustrate very distinct distributions, although both measure the same market.

QUALITY STRATEGIES defines the High Capacity Market as the universe of DS-1 (1.544 Mbps) and DS-3 (45 Mbps) circuits used either for end user customer's traffic (Provider) or for carrier transport (Transport).

- End users utilize high capacity circuits to connect two business locations in the same LATA (point-to-point) or to connect to a carrier's point-of-presence (POP) (special access).
- Carriers utilize high capacity transport circuits to provide links between POPs, central offices, and tandems.

The following diagram depicts the various components of the High Capacity Market, which is represented by the sum of A1, A2, B1, B2, C1 and C2.



PROVIDER MARKET

Provider circuits are DS-1 and DS-3 circuits provisioned by a facilities-based local telecommunications provider (either U S WEST or a CAP). These circuits are ultimately purchased by end users to transmit voice and data traffic from the end user's premise to a POP or CAP switching center. The provider does not always sell the circuit directly to the end user. Referring to the diagram, the Provider Market is defined as A1+A2+B1+B2.

TRANSPORT MARKET

Transport circuits are high capacity lines purchased by carriers to transmit voice and data traffic from one POP to another or to transmit voice and data traffic from a POP to a central office or tandems (for distribution). Transport circuits are purchased by one communications company from another communications company. Referring to the graphic, the Transport Market is comprised of C1+C2.

THE RETAIL MARKET

The retail view is another method of distributing Provider share. Instead of crediting the company that provisions the circuit, the Retail Market credits the company that sells and bills for the circuit and maintains the relationship with the end user. The Retail Market is defined as A1+A2+D1+D2.

THE WHOLESALE MARKET

The wholesale view consists of circuits provisioned by a local telecommunications provider (either U S WEST or a CAP) and sold to another telecommunications provider - either for resale to end users or for transport. The Wholesale Market is comprised of B1+B2+C1+C2.

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MARKET SHARE

To formulate market share estimates, QUALITY STRATEGIES considered several inputs. Results are primarily based on primary, survey market research that elicits share figures based on end user data. Additionally, QUALITY STRATEGIES analysts conducted an exhaustive competitive research analysis to gather additional information about each market examined.

As of the fourth quarter of 1997, U S WEST's share of the High Capacity Market was 72.8%. During this time, U S WEST share of the Provider Market was 65%. In other words, U S WEST facilities constituted 65% of circuits being used by end users for DS-1 and DS-3 high capacity services. U S WEST retained approximately 21% of the Retail Market - meaning U S WEST maintained a relationship with fewer than one forth of all end users in the fourth quarter of 1997. The disparity is largely the result of carrier purchases of U S WEST/CAP circuits for resale to end-users.

In the fourth quarter, U S WEST circuits constituted approximately 74% of the Seattle Transport Market. CAPs generally install extraordinary amounts of excess capacity around long distance POPs and local COs and are capable of absorbing traffic from U S WEST facilities immediately. This is the primary reason for the significant drop in market share between the second and fourth quarters of 1997; by installing excess capacity, CAPs have facilitated a situation where traffic can be easily migrated from one carrier's facilities (U S WEST) to another's (Seattle CAPs). U S WEST's Transport share is particularly vulnerable to competitors as long distance carriers and CAPs begin to consolidate.

In addition to the Transport Market, recent telecom mergers and consolidations are likely to impact the Wholesale Market. In the fourth quarter of 1997, U S WEST accounted for approximately 72% of the Wholesale Market, which includes circuits sold to carriers for purposes of resale or for transport. As CAPs' and carriers' relationships grow, carriers are less likely to purchase wholesale circuits from U S WEST and are likely to migrate services to acquired subsidiaries.

The continuing trend toward a declining market share for U S WEST becomes evident through an examination of its share of market growth over the last several quarters. Between the second and fourth quarters of 1997, U S WEST accounted for 22.1% of Transport Market growth and 35.5% of Provider Market growth. Losses in market growth may not become evident in installed-base share results for several quarters as the market grows and U S WEST accounts for a smaller percentage of the total. Share of growth is the primary indicator of how a competitor's installed-base market share will look in the future - and CAP competitors in the Seattle area have captured a majority share of market growth over the past several years.

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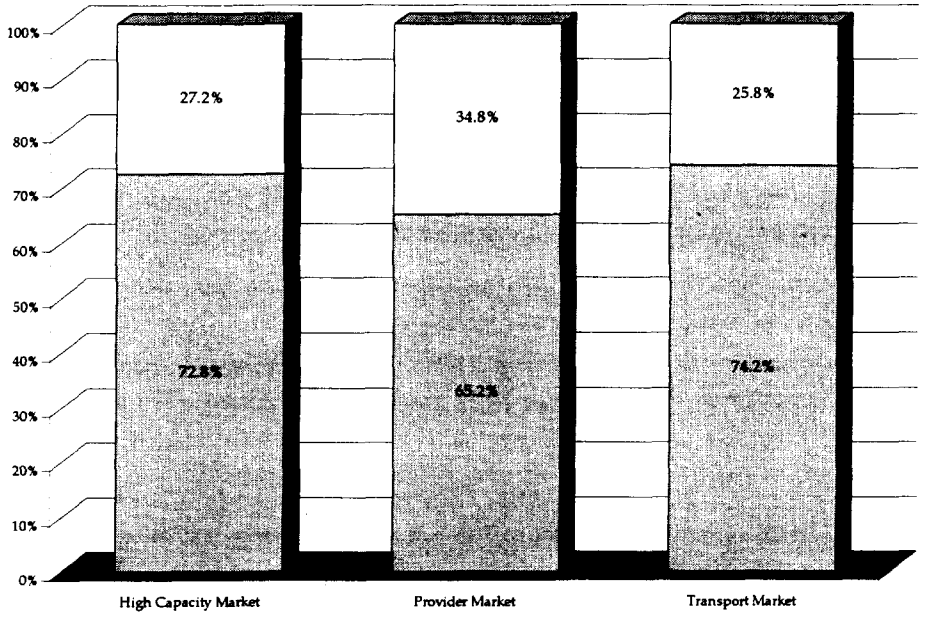
HIGH CAPACITY MARKET

U S WEST's market share for the fourth quarter of 1997 accounts for approximately 72.8% of the High Capacity Market in the greater Seattle area. The market is comprised of the Provider Market (in which U S WEST accounts for approximately 65.2% of the total) and the Transport Market (in which U S WEST accounts for 74.2%). Following are several views of the High Capacity Market. All of the charts include DS-1 and DS-3 circuit information. On some of the charts DS-0 circuit information is also included. The charts that include DS-0 circuits are clearly labeled. DS-0 circuits are included because in some views of the market the survey results included DS-0 circuits and this information cannot be extracted. Overall the DS-0 circuits when converted to DS-1 equivalents do not appreciably affect the results, accounting for approximately 4% of the market.

SEATTLE MSA
U S WEST HIGH CAPACITY MARKET SHARE
4Q97



	U S WEST	Competitors
High Capacity	**72.8%**	**27.2%**
Provider	65.2%	34.8%
Transport	74.2%	25.8%

Results for Provider Market are presented at a 95% Confidence Level with a ±5% Margin of Error.

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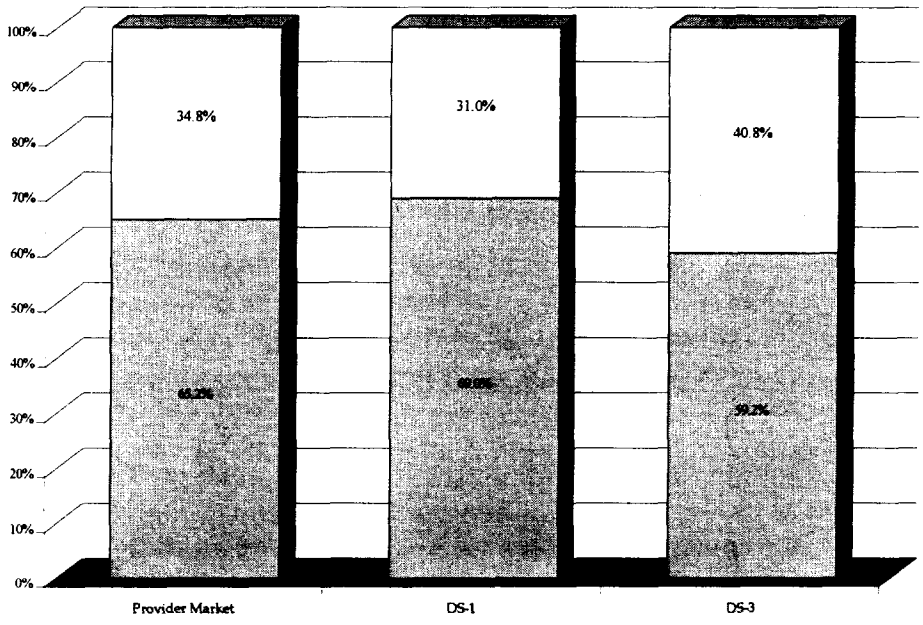
PROVIDER MARKET

To date, facilities-based competitors have captured approximately 35% of the Provider High Capacity Market in the Seattle MSA. This can be attributed to recent marketing campaigns geared toward the end user and a proliferation of competitive alliances between CAPs and long distance carriers.

The High Capacity study was designed to measure U S WEST's and its competitors' share of DS-1 and DS-3 circuits. As a provider, U S WEST's share of the DS-3 market has declined more rapidly than its share of the DS-1 market. This is largely attributable to competitor's marketing strategies that attempt to secure large, bandwidth-intensive businesses. Because many of the larger business end users are located in Seattle's central business district, competitors have been able to reach them on a facilities basis without investing a substantial amount of resources in infrastructure.

SEATTLE MSA
U S WEST PROVIDER MARKET RESULTS (BY CIRCUIT SPEED)
4Q97



	U S WEST	Competitors
Provider Market	**65.2%**	**34.8%**
DS-1	69.0%	31.0%
DS-3	59.2%	40.8%

Results for Provider Market are presented at a 95% Confidence Level with a ±5% Margin of Error. Disaggregated Share results have higher margins of error to account for smaller sample sizes

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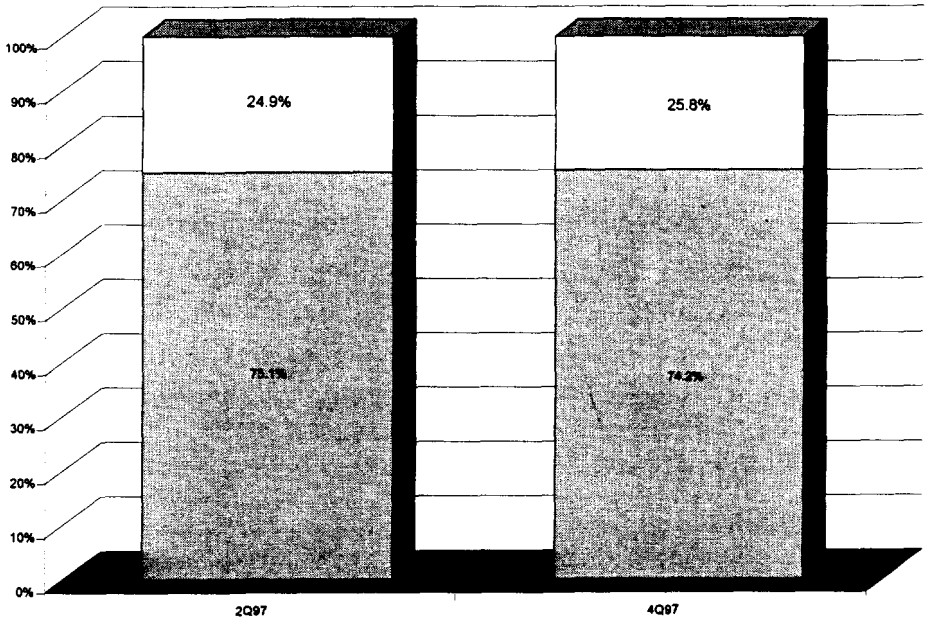
TRANSPORT MARKET

As has been the case in the Provider Market, CAPs are beginning to capture a large percentage of the Transport Market. As of fourth quarter, 1997, competitors comprise roughly 25.8% of the Transport Market, up from 24.9% in the second quarter of 1997. This is largely the result of a desire on the part of carriers to minimize dependence on U S WEST. Additionally, CAP share of the Transport Market is likely to increase substantially as they are absorbed by interexchange carriers and other, large telecommunications companies. Although U S WEST's share of the Transport Market is higher than its share of the Provider Market, the Transport Market is expected to experience increased losses as CAPs and carriers merge and form competitive alliances. While U S WEST's market position is vulnerable in each market, many analysts foresee the rapid erosion of RBOC Transport Market share in the near future.

SEATTLE MSA
TRANSPORT MARKET SHARE
2Q97-4Q97



	2Q97	4Q97
U S WEST	75.1%	74.2%
Competitors	24.9%	25.8%
	100.0%	100.0%

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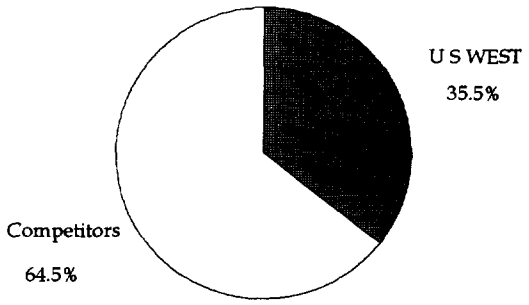
PROVIDER MARKET GROWTH

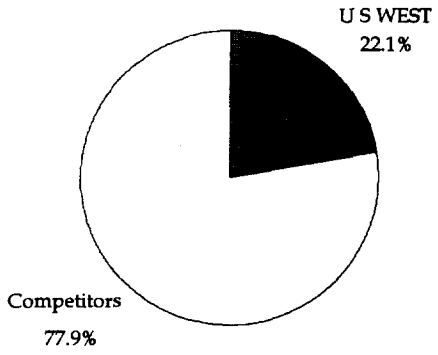
One of the key indicators of future market share in the telecommunications market is share of market growth in the present. Market growth is defined as new market growth (new subscriptions), the conversion of switched lines to high capacity facilities and competitive conversions. Although U S WEST accounts for over 65.2% of Provider high capacity circuits, U S WEST accounted for roughly 35.5% of the market growth. Facilities based competitors were responsible for nearly two-thirds of new high capacity circuits added between June and September. At this rate, U S WEST can expect its share of the installed base to diminish to its share of market growth.



	2Q97 - 4Q97
U S WEST	35.5%
Competitors	64.5%
	100%

TRANSPORT MARKET GROWTH

U S WEST's share of the Transport Market growth is lower than its share of Provider Market growth. Between the second and fourth quarters of 1997, U S WEST was responsible for only 22.1% of new transport circuits. At this pace, U S WEST can expect its share of the installed base to continue to decline rapidly.



	2Q97 - 4Q97
U S WEST	22.1%
Competitors	77.9%
	100.0%

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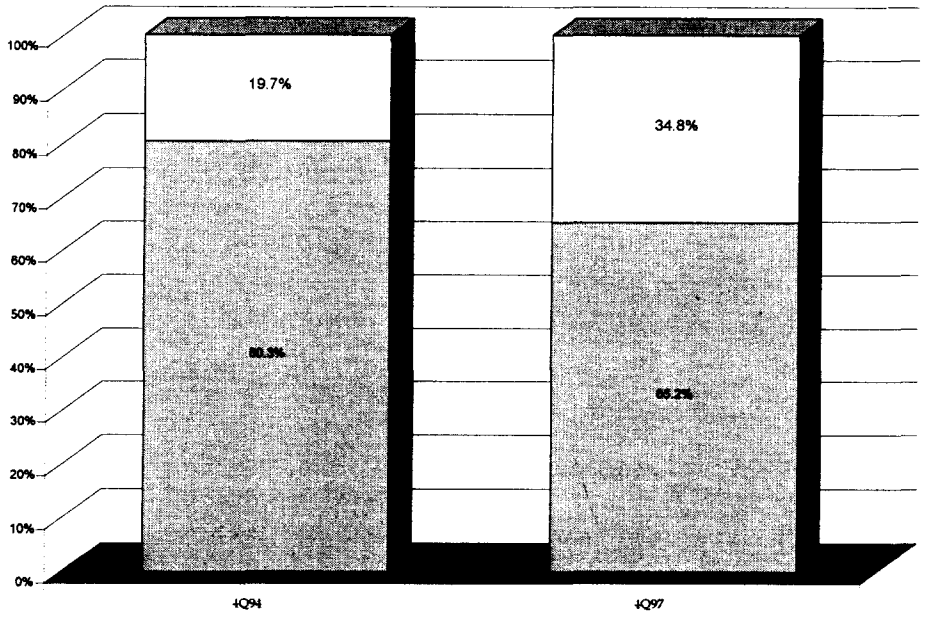
TREND

The most effective means of demonstrating U S WEST Provider Market share loss is to view its share over time. QUALITY STRATEGIES has been tracking high capacity data for U S WEST since the fourth quarter of 1994. Since that time, U S WEST has relinquished a considerable portion of the Provider Market. Since 1994, the CAP presence in the Seattle MSA has grown rapidly. Conversely, U S WEST's market share fell rapidly.

The following chart provides market share trend data. Trend includes DS-1, DS-3, and DS-0 circuits.

SEATTLE MSA
PROVIDER MARKET SHARE TREND*
4Q94-4Q97



	4Q94	4Q97	*4Q94-4Q97*
U S WEST	80.3%	65.2%	*-15.1%*
Competitors	19.7%	34.8%	*15.1%*
	100.0%	100.0%	

*Trend data for the Provider Market includes DS-0, DS-1, and DS-3 circuits.
Results for the Provider Market are presented at a 95% Confidence Level with a ±5% Margin of Error.

RETAIL MARKET

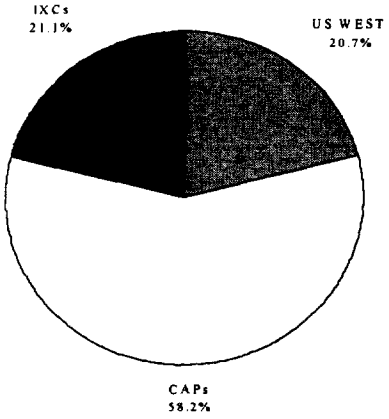
As indicated previously, the High Capacity Market can also be viewed as Retail and Wholesale Markets. In the Retail Market, competitors account for nearly 80% of end user relationships. U S WEST's largest competitors are currently AT&T, MCI, and Sprint. However, the vast majority of IXC-billed high capacity circuits are resold by the carrier rather than provisioned directly. Following completion of the AT&T/TCG and WorldCom/MCI mergers, the two aforementioned providers will comprise over 51% of the Retail Market.

This Retail data includes DS-1, DS-3, and DS-0 circuits.

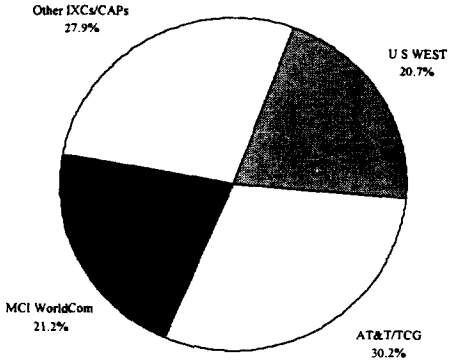
SEATTLE MSA

U S WEST MARKET SHARE OF THE RETAIL MARKET*

4Q97



RETAIL SHARE (U S WEST AND COMPETITORS)



RETAIL SHARE (IXCS AND ACQUIRED CAPS SHOWN TOGETHER)

*Retail Market includes DS-0, DS-1, and DS-3 circuits.
Results for the Retail Market are presented at a 95% Confidence Level with a ±5% Margin of Error. Disaggregated Share results have higher margins of error to account for smaller sample sizes.

WHOLESALE MARKET

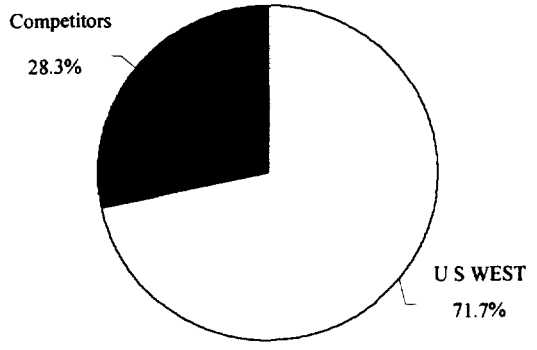
Currently, U S WEST accounts for less than 72% of the Wholesale Market (defined as the universe of circuits sold to resellers and circuits used for transport). However, U S WEST's share is likely to decrease substantially over the next several quarters following the completion of recent mergers in the telecom industry. AT&T and MCI will begin to take advantage of having local facilities at their disposal and attempt to decrease the amount of business it conducts with the RBOCs.

Wholesale data includes DS-1, DS-3, and DS-0 circuits.

SEATTLE MSA

U S WEST MARKET SHARE OF THE WHOLESALE MARKET*

4Q97



	4Q97
U S WEST	71.7%
Competitors	28.3%
	100.0%

*Wholesale Market includes DS-0, DS-1, and DS-3 circuits.

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COMPETITIVE LANDSCAPE

OVERVIEW

Currently, the following four CAPs operate networks in the Seattle MSA and compete with U S WEST for Provider and Transport market share:

- WorldCom
- Teleport Communications Group (TCG)
- MCI
- Electric Lightwave, Inc. (ELI)

Each of the four aforementioned competitors has invested resources to build optical fiber networks in the Seattle area that compete directly with U S WEST. Because the High Capacity (Transport and Provider) Market is very specialized, the CAPs have become niche communications providers catering to interexchange carriers and business customers in particular vertical segments (particularly financial services, health care, and information transfer). This has allowed CAPs to focus on small geographic areas when constructing fiber networks (particularly central business districts and business-intensive suburbs).

The greater Seattle area is one of the fastest growing areas in the United States. The population has been steadily growing over the past 30 years, and is expected to reach 3.7 million by the year 2010. Seattle is growing even faster economically, especially in the healthcare and technology fields. Seattle-King County is considered the healthcare center of the Pacific Northwest. It has also become a leading center for advanced technology in computer software, biotechnology, electronics, medical equipment, and environmental engineering. Microsoft, the biggest computer software company is the world, is only one of the over 2,200 computer development firms in the area. Boeing is the largest employer in the area, accounting for over 12,400 jobs. These organizations and industries are heavily dependent upon High Capacity Services and emerging telecommunications technologies.

The Seattle High Capacity Market is one of the most competitive markets in U S WEST's territory and is expected to experience rapid growth. Four CAP/CLECs have installed facilities and are competing with U S WEST for customers. TCG, ELI, WorldCom, and MCI have each constructed fiber facilities and installed central office switches. A brief overview of these companies and their competitive presence in the Seattle area follows.

TCG SEATTLE

TCG and CLEC rival ELI have both operated local area networks in the Puget Sound areas since 1993. Both companies began offering CAP services to many of the larger business customers in the area as well as to interexchange carriers. TCG's network was originally located in downtown Seattle, but has grown to serve customers in all major business sectors in the greater Seattle area. Additionally, TCG was the first competitor to enter the facilities-based local exchange market in the Seattle area with the rollout of

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local services in 1995. Local exchange competition has existed longer in Seattle than in any other major U S WEST market and TCG has made major inroads on the incumbents' market share.

Teleport's Seattle-area backbone is among the most modern in the world. Transmission speeds occur at OC-48 along the backbone and at OC-48, 12, or 3 along individual spurs connecting buildings to the backbone. The vast majority of TCG's local networks were originally constructed in the central business district of a major city and built out to the suburbs as demand for telecommunications services increased. This same strategy was employed in the building of the Seattle network. TCG's Seattle 380 mile network currently consists of 11 fiber rings, five of which are located in downtown Seattle. Thus far, TCG has connected approximately 115 buildings to its fiber network; the vast majority of which (over 70) are located inside Seattle. TCG is likely to continue this expansion as its local exchange revenue flow continues to increase. TCG prides itself on offering true facilities-based competition to large and medium-sized businesses and says it will continue lighting buildings in the greater Puget Sound area to keep traffic on its own network. However, TCG may begin purchasing unbundled network elements (UNEs) from U S WEST in the future to serve smaller businesses away from the fiber backbone.

The majority of TCG's traffic in the MSA is centered around the portion of the network in downtown Seattle. TCG has connected several buildings housing the region's largest banks, law firms and accounting firms as well as several hospitals and medical centers. From downtown, the fiber travels extensively in both directions and forms a ring around Lake Washington. The Northern extent of TCG's Seattle-area network is Blaine, on the Canadian border, approximately 100 miles North of Seattle. The Southern border of TCG's network is Federal Way, located five miles North of Tacoma.

TCG has been offering high capacity and data services to Seattle-area customers for several years. TCG's stated organizational goal is to become a provider of integrated telecommunications services for businesses of all sizes representing all vertical segments. However, thus far, TCG's focus in Seattle has been on medium and large businesses. Until April 1997, TCG only offered services to businesses with 100 or more employees. It has since begun targeting smaller businesses for local switched services. TCG has recognized the importance of a varied product offering and has become one of the industry's leaders in bundling services. TCG currently offers local switched services, private line services, enhanced data services (including two types of ATM, frame relay, Ethernet, fast Ethernet, etc.), Internet access (through 1997 acquisition CerfNet), as well as its own form of branded long distance.

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WORLDCOM SEATTLE

WorldCom's Seattle-area network was originally constructed by MFS Telecom in 1994 and later purchased by WorldCom when it bought MFS and UUNET in 1996. The network covers a broad geographic area stretching from Everett in the North to Renton in the South. MFS originally built its network in downtown Seattle to provide dedicated access to communications-intensive businesses in the financial services, health care, and manufacturing industries. Shortly thereafter, MFS began offering point to point connections and expanding its network to meet that demand. MFS then expanded to Bellevue on the eastern side of Lake Washington. In recent years, Bellevue has become home to many high-tech companies as well as many telecommunications businesses. Eventually, MFS built its network to serve customers all the way around Lake Washington. WorldCom hopes to have fiber in nearly every major multi-tenant building in the greater Seattle area. WorldCom now serves the following areas:

- Kent
- Auburn
- Kirkland
- Redmond
- Bellevue
- Edmonds
- Everett

WorldCom's greater Seattle network is comprised of at least seven individual SONET rings and stretches nearly 150 route miles and connects between 70 and 100 buildings. Additionally, the Seattle local area network is situated on a WorldCom long distance SONET ring that connects Seattle with Portland and Salt Lake City. Therefore, WorldCom's customers in the greater Seattle area have full redundancy in a local network as well as the long distance network. Portions of WorldCom's backbone now run at OC-192 speeds with the rest running at OC-48, OC-12, or OC-3. WorldCom has constructed a mesh network that uses SS7 signaling in Seattle.

WorldCom currently has a diverse product offering in the greater Seattle area consisting of everything from local and long-distance services to data services to Internet access (through the 1996 acquisition of UUNET). MFS was one of the pioneers in service bundling and WorldCom is continuing in that tradition. One of the most recent promotions includes the bundling of a Nortel telephone system with Meridian features with long distance services. For customers spending $5,000 or more per month in long distance, WorldCom will roll the cost of the phone system into the long distance bill at a considerable savings to the customer.

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ELECTRIC LIGHTWAVE (ELI) SEATTLE

Although TCG sales representatives claim to have a larger share of the local switched services, ELI is generally regarded as the leader in competitive local telecommunications in the greater Seattle/King County area. ELI is based in Vancouver, Washington and has established operations in several western states, including Washington, Oregon, California, Utah, and Arizona. Electric Lightwave is seeking to become the leading provider of diversified communications services in the Western United States. Along with local voice services, ELI offers enhanced data services, high speed Internet access, and long-haul capabilities. ELI generates its revenues from sales to end-users as well as to interexchange carriers and to local and regional Internet service providers. It has become one of the largest providers of data transmission services in the West (especially to ISPs). It currently operates metropolitan area networks in Seattle, Portland, Sacramento, and Salt Lake City, and owns DS-3 long haul facilities connecting each of them. In addition, it has Internet links in Seattle, Portland, Sacramento, San Jose, and Salt Lake City. ELI began offering private line services to businesses in the greater Seattle area in 1993 and has been offering dial tone since 1995. ELI's entire Seattle network is constructed according to SONET ring technology with backbone speeds up to OC-192. The remainder of the backbone operates at OC-3, 12, or 48.

When ELI first began constructing its network in the early part of the decade, its primary focus was on downtown Seattle. ELI's primary customer base during its first couple of years in operation consisted of financial institutions, hospitals, and manufacturing facilities. Over the last several years, ELI has been increasing the scope of its operations in the greater Puget Sound area in an attempt to satisfy customer demand for services, as well as to keep up with its aggressive competitors. In 1996, ELI constructed facilities connecting its primary Seattle backbone to the city of Bellevue (on the eastern side of Lake Washington). This marked ELI's primary foray to the Eastside, which is still continuing today. Currently, ELI's network spans nearly 150 route miles and connects approximately 70 multi and single-tenant buildings. The vast majority of lit buildings are located in Seattle (50-60) with the rest located elsewhere in the area.

The vast majority of voice and data traffic on ELI's local area network occurs in downtown Seattle where most of its facilities are located. However, an increasing amount of traffic is being transmitted in the suburbs, especially along the Eastside. ELI is capable of offering local dial tone to customers in any building in the area, however it prefers to serve those in on-net buildings.

ELI's primary sales strategy in the greater Seattle area is to be a one-stop shop for telecommunications services. It offers local exchange, long distance, high capacity, and data services as well as Internet access. ELI offers several services that have not been rolled out on a wide-scale basis by other facilities-based CAPs yet in the Seattle area-such as ISDN PRI. Additionally, ELI targets companies with other locations in Portland and/or Salt Lake City so it can provide long haul voice and data connections.

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MCI SEATTLE

MCI first entered the Seattle area's local service market in April 1996. In the majority of its local markets, MCI installs one or two fiber rings connecting buildings housing its largest long distance customers and provides them with facilities-based high capacity and local switched services. However, Seattle is a different story. When MCI decided to enter the local market, it purchased the facilities installed by Western Union. This acquisition provided MCI with a local infrastructure in several key markets, including Seattle, Boston, New York, and Miami. MCI's Seattle area network is constructed according to SONET architecture with backbone speeds of OC-48. Its SONET ring network in downtown Seattle connects most of the larger multi-tenant buildings. In addition, its network can provide services to customers in cities and towns throughout the MSA. MCI now offers Seattle-area businesses a full array of communications services from long distance to local exchange, Internet access and enhanced data services such as frame relay and ATM.

In Seattle, MCI was late to market when compared with several of its facilities-based competitors (ELI and TCG); however, it managed to beat AT&T and WorldCom to the market. MCI has a distinct advantage over the other facilities-based providers in that it is already a household name. MCI has been offering long distance services to business and residential customers in the area for over a decade and has managed to establish a fair amount of name recognition. MCI's core competency has been providing long distance and data services to larger businesses.

MCI still generally targets medium to large and very large businesses for local and high capacity services from its network in the Puget Sound area.

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CONSOLIDATION

Over the last two years, mergers and competitive alliances have transformed the competitive landscape of the telecommunications market. Several of these mergers involve CAPs and long distance carriers that compete directly with U S WEST and will dramatically affect its market position over the next several years.

MCI/MFS WORLDCOM

The first major merger announced in 1997 (involving U S WEST competitors) was a union of MCI Communications of Washington, D.C. and WorldCom of Jackson, MS. The merger follows WorldCom's 1996 acquisition of Metropolitan Fiber Systems (a facilities-based competitor of U S WEST in the Seattle area) and its 1997 acquisition of Brooks Fiber Properties. Additionally, MFS has already acquired national ISP UUNET in 1996 before its acquisition by WorldCom. The combined entity will have significant market power in Seattle and the United States as a whole. It combines the nation's second and fourth largest long distance companies, a major provider of competitive local communications services, and the two largest Internet backbone operators in the world.

The combined MCI WorldCom facilities have:

- Over 170 route miles of local fiber (including WorldCom's 150 route mile backbone and MCI's 20-40 miles)
- Two central office switches
- Over 100 "lit" buildings
- Several long-distance POPs and switches

With this merger MCI WorldCom will be able to decrease its reliance on U S WEST's services and facilities. Currently, U S WEST provisions hundreds of high capacity circuits linking MCI long distance customers to the MCI POP in Seattle. However, it will have the option of moving a large percentage of this traffic over to WorldCom facilities – resulting in a substantial reduction in MCI's costs. Because WorldCom has connected numerous buildings to its Seattle-area network, MCI will have the option of providing true facilities-based service on a large-scale basis through the utilization of WorldCom facilities. MCI may also further decrease its reliance on U S WEST's facilities which supply the infrastructure used for the origination and termination of long-distance calls by migrating transport traffic from U S WEST-provisioned circuits to WorldCom's facilities.

Additionally, the two companies have an apparent synergy that will strengthen the merged carrier and allow it to impact the market quickly. Because WorldCom's traditional market consists of smaller and medium-sized businesses while MCI tends to focus on the large business market, there will be minimal overlap in sales forces and a less complicated integration of operations.

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AT&T/TCG

Also in 1997, AT&T and TCG announced their merger. The acquisition provides AT&T with an easy, rapid entrance to the facilities-based local exchange and High Capacity Markets. TCG becomes the recipient of a well-established sales channel to increase its switched services customer base.

In a manner similar to the MCI/WorldCom merger, there is an apparent synergy between AT&T and TCG. Traditionally, TCG has directed its marketing efforts toward the large business market, and rapidly accumulated a customer list laden with Fortune 500 companies. Conversely, AT&T's recent strengths have been the small business and consumer markets. With the merger, AT&T will be poised to reassert its influence among large business customers and TCG will expand its penetration to include the small business market. TCG will also acquire additional resources from the merger to allocate for network expansion in the Seattle MSA.

Like MCI, AT&T stands to benefit significantly from the merger in that it will undoubtedly lead to a reduction in operating costs in its core business - long distance. AT&T will be able to reduce its reliance on U S WEST for high capacity circuits to AT&T's customers, transport, and switched access.

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COMPETITORS AT A GLANCE

The following matrices provide summary information for high capacity facilities-based competitors in the Seattle MSA.

	WorldCom	TCG	ELI	MCI
Overall Strategy	One-stop provider for communications services, including local exchange, HICAP, data, internet, long-distance.	Leading provider of communications solutions to businesses. Service packages include local, data, long-distance, HICAP.	Provider of diversified communications services, including local, long-distance, HICAP, and data services	One-stop, single billing for businesses. Services include local, long-distance, HICAP, data.
Approximate Route Miles	150	>380	150	20-40
On-net Buildings	70-100	>115	70	25-35
Central Office Switching	Nortel DMS 500	Lucent 5ESS	Nortel DMS 500	Nortel DMS 500
Network Establishment	1994 (MFS)	1993	1993	1996
Business Target Markets	Traditional focus on the middle market. Seeks national accounts, solicits to other tenants in on-net buildings. Focus on existing WorldCom, UUNET customers.	Traditional focus on high-end users, now moving "down-market." Most TCG customers have enormous communications needs.	Middle market and high-end users, ISPs.	Traditional focus on large businesses. Relies heavily on existing long-distance customer base. Reputation for outstanding customer service.
Residential Target Markets	Not actively targeting	Not actively targeting	Not actively targeting	Not actively targeting
Geographic Areas	Seattle's central business district, Kent, Auburn, Kirkland, Redmond, Bellevue, Edmonds and Everett, rings Lake Washington	Central Seattle, rings Lake Washington and extends to Blain in the north and Federal Way in the south.	Central Seattle and Bellevue	Fiber is located in Seattle's central business district and facilities extend throughout the MSA
Competitive Alliances	Pending merger with MCI to form MCI WorldCom	Pending merger with AT&T		Pending merger with WorldCom to form MCI WorldCom

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CONCLUSIONS

To date, U S WEST has lost approximately 27% of the High Capacity Market. This market includes both the Provider Market (consisting of special access and point to point circuits) and the Transport Market (consisting of circuits connecting POPs and central offices or tandems).

Currently, U S WEST's share of the Provider Market is approximately 65%; down from 80% in the fourth quarter of 1994. Competitors have chipped away at U S WEST's market share through facilities buildout and alliances with interexchange carriers. Traditionally, U S WEST's facilities-based competitors have targeted its most valuable accounts - bandwidth-intensive large businesses. Because of this, CAP competitors have captured a greater percentage of the DS-3 (45 Mbps) market than the DS-1 (1.5 Mbps) market.

From a retail perspective, U S WEST maintains a billing relationship with fewer than 21% of all high capacity circuits. In other words, CAPs and IXCs maintain the end user relationship for 79% of special access high capacity circuits despite the fact that U S WEST currently provisions over 65% of these circuits.

While U S WEST's share of the Transport and Wholesale Markets are higher than its share of the Provider Market, recent incremental losses indicate that the figures may achieve parity in the near future. As of the fourth quarter of 1997, U S WEST accounts for 74% of the Transport market. Along the same lines, U S WEST's share of the Wholesale Market had dropped to 71.7% in fourth quarter 1997. Much of this share loss can be attributed to the realignment of carriers and IXCs desire to minimize the amount of business they conducts with U S WEST.

There is every indication that erosion of U S WEST's share of the Seattle High Capacity Market will continue. Both U S WEST's relatively low Retail Market share and the enormous amount of capacity available in competitive networks make it highly likely that U S WEST's share of the Provider and Transport Markets will continue to decline. This decline is expected to be exacerbated by continued consolidation in the telecommunications industry (e.g., the merger of AT&T and TCG).

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APPENDIX A: QUALITY STRATEGIES CAPABILITIES AND EXPERIENCE

QUALITY STRATEGIES is a research and consulting firm working exclusively in the telecom industry. QUALITY STRATEGIES has provided competitive market information, including market share results and competitive market data to every RBOC and large LEC for the last decade.

QUALITY STRATEGIES maintains its own professional team of analysts, methodologists, client service personnel and calling centers focused exclusively on the telecommunications market.

QUALITY STRATEGIES believes that quantitative market share data can be coupled with qualitative competitive data to accurately describe and assess the market for high capacity circuits. The information provided in each section is designed to supplement that from the other. This analysis is based on primary and secondary market research conducted for U S WEST. Market Share estimates reflect fourth quarter, 1997 analyses. Overall Provider and Retail estimates are based on a 95% confidence interval with a ±5% margin of error. Wholesale and Transport market share estimates are primarily the result of extensive competitive research (see appendix for additional information on methodology).

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APPENDIX B: METHODOLOGY OVERVIEW

MARKET SHARE SUMMARY OVERVIEW

Market share results for Provider and Retail Market are based on actual usage obtained from surveys and invoice analyses. Market share results for this project are based on customer usage as of the fourth quarter of 1997. The following steps illustrate our process for delivering end user Provider and Retail market share results for U S WEST:

STEP 1: COMPETITOR AND INDUSTRY ANALYSES

Multiple inputs to sampling approach and sample plan, including competitor research, proprietary regional and national databases, and pre-survey screeners.

STEP 2: ESTABLISH SAMPLE PLAN AND QUOTAS

Develop preliminary market share estimates, establish quotas for appropriate strata, including high penetration and low penetration strata, and sub-strata (demographics, spending levels, etc.).

STEP 3: DEVELOP AND SELECT SAMPLE

Develop and select stratified random sample from sampling frame constructed from multiple sources, including third-party lists of businesses and proprietary databases.

STEP 4: CONDUCT FIELDWORK

Collect survey data and invoices. Based on the quotas established in the sampling plan, we conduct fieldwork to collect three inputs - short form surveys, long form surveys, and invoices - on which market share results ultimately are developed.

Achieve quotas for strata, and supplement with additional interviews for low incidence strata. Calibrate self-reported data with appropriate invoice bias factors.

STEP 5: ANALYSIS AND REPORTING

Analyze survey data and invoice data, and develop final results.

SAMPLING METHODOLOGIES

We develop our sampling plan using stratified random sampling techniques, which provide for efficient statistical estimates by designing the sampling plan based on particular strata (e.g., mix of utilization of competitors, demographic characteristics, geographic location, etc.) that we have developed and successfully applied over the past ten years. We utilize a mix of random and targeted surveys based on the stratified random sampling techniques. We use the random surveys to qualify respondents for different quotas established in our sampling plans. We also use the data obtained in the random surveys to establish weights for different strata when we reconstitute market share results.

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SOURCES OF MARKET SHARE DATA

Market share results are based on data acquired from multiple sources, including surveys, customer invoices, and competitor research. We use our standard HICAP survey to collect data from business customers. QUALITY STRATEGIES surveyed business customers regarding their usage of high capacity DS-1 and DS-3 services. The survey includes questions on all competitive DS-1 and DS-3 services, including CAP fiber-based services, microwave services, satellite services, and customer-owned facilities. We also use surveys to collect demographic information, perception data, and other information not available on customer invoices.

We acquire customer invoices (RBOC, CLEC, CAP, IXC, and other competitive services) to provide market share results that are based on actual customer usage. We collect customer invoices to validate self-reported data and to calibrate reconstituted market share results based on actual customer expenditures and to correct for over- and under-reporting. On an aggregate basis, we analyze differences between survey and invoice data to develop and utilize bias estimates when calculating market share results.

STATISTICAL VALIDITY

This project is designed to provide estimates of high capacity (DS-1 and DS-3) share that are statistically valid for U S WEST's overall high capacity services compared to competitive alternatives. Sample sizes are designed to achieve statistically valid market share results for the Seattle MSA.

High capacity (Provider and Retail) market share results for the Seattle MSA are based on a 95% confidence level with ±5% margins of error. Estimates for particular types of high capacity services (i.e., disaggregated results) are likely to have a higher margin of error. Trend results are based on a consistent methodology across time periods.

COMPETITOR RESEARCH OVERVIEW

The competitive analysis is comprised of information gathered by QUALITY STRATEGIES' analysts for two separate "CAP/CLEC Network Descriptions" projects commissioned by U S WEST in the third and fourth quarters, 1997. Competitive information is gathered from numerous sources (both primary and secondary) including the following:

- Interviews with CAP/CLEC and IXC professionals, including marketing, sales, administrative, executive, and technical personnel
- Interviews with large business end users
- Interviews with equipment vendors and equipment retailers
- Secondary market research including on-line sources and public information
- QUALITY STRATEGIES' extensive, national competitor database that has been maintained and updated continuously over the last ten years

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HIGH CAPACITY MARKET SHARE

High Capacity Market share is based on all end-user DS-1 and DS-3 services, including Special Access and Point-to-Point (exchange) circuits as well as transport circuits (measured in DS-1 equivalents).

Prior to 2Q97, Quality Strategies had been providing U S WEST with HICAP Track results for providers offering facilities-based service. Thus, no resellers have been included in Provider Market results. Since 2Q97, Quality Strategies has been presenting Provider results in addition to Wholesale and Retail Market results. Each set of results is clearly documented to indicate whether it encompasses facilities-based provider results, retail results that include resellers, or wholesale results.

QUALITY STRATEGIES uses DS-1 equivalents as the basis for market share estimates. Market share is provided for each service provider in terms of the percentage of DS-1 equivalents provided. Specific steps used to determine DS-1 equivalent share for each competitive category are as follows:

A. Determination of DS-1 Equivalents. High Capacity market share is provided on a DS-1 equivalent basis. All circuits are expressed in terms of 1.544 Mbps. QUALITY STRATEGIES uses the following calculations to determine DS-1 equivalent share:

- One (T-1) DS-1 Circuit = One DS-1 Equivalent
- (T-3) DS-3 Circuits: Number of DS-3 Circuits x 28 = Number of DS-1 Equivalents

B. Determination of DS-1 Equivalents Percentage Share. DS-1 equivalents are totaled, and share is presented based on the percentage of the total each carrier provides.

Retail v. Wholesale. As stated previously, retail circuits are sold to end users. Wholesale circuits are provided to CAP/CLECs and IXCs for resale to end users. For example, a U S WEST circuit could be sold to AT&T (and paid for by AT&T), but resold to AT&T long-distance customers for special access to the AT&T POP. In this case, the end user is billed by AT&T although the circuit is provisioned and maintained by U S WEST. In this scenario, U S WEST receives Provider and Wholesale Market share for the circuit while AT&T receives Retail Market credit. Share of the Wholesale Market includes both end-user and transport circuits.

QUALITY STRATEGIES provides market share estimates based on DS-1 equivalents. Market share is provided for each service provider in terms of percentage of DS-1 equivalents provided.

B